

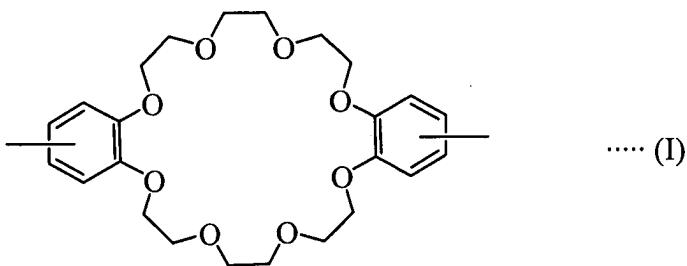
**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1-3. (canceled).

4. (currently amended): A crosslinked body ~~according to claim 3 obtained by crosslinking plural polymers through mechanical bonding with a rotaxane structure consisting of a shaft and a ring(s), wherein the polymer is a polycrown ether and the polycrown ether has a~~ crown ether unit represented by the following formula (I):



5. (currently amended): A ~~The~~ crosslinked body according to claim 4, wherein the polycrown ether contains the crown ether unit of the formula (I) and a urethane bond.

6. (currently amended): A ~~The~~ crosslinked body according to claim ~~3~~ 4, wherein the polycrown ether is formed by mechanical bonding with a bifunctional ammonium salt having a disulfide bond.

7. (currently amended): A ~~The~~ crosslinked body according to claim 6, wherein the bifunctional ammonium salt having the disulfide bond is represented by the following formula (II):



(wherein  $R^1$  is a bulky group larger than a hole size of the crown ether unit in the polycrown ether,  $R^2$  is a bivalent hydrocarbon residue, which may include a hetero atom, and  $X^-$  is a monovalent anion).

8. (currently amended): ~~A-The~~ crosslinked body according to claim-3~~4~~, wherein the polycrown ether is formed by mechanical bonding with a bifunctional ammonium salt having two urethane bonds.

9. (currently amended): ~~A-The~~ crosslinked body according to claim 8, wherein the bifunctional ammonium salt having two urethane bonds is represented by the following formula (III):



(wherein  $R^1$  is a bulky group larger than a hole size of the crown ether unit in the polycrown ether,  $R^3$  and  $R^4$  are independently a bivalent hydrocarbon residue, which may include a hetero atom, and  $X^-$  is a monovalent anion).

10. (currently amended): ~~A-The~~ crosslinked body according to claim-4~~4~~, wherein the polymer corresponds to the shaft of the rotaxane structure.

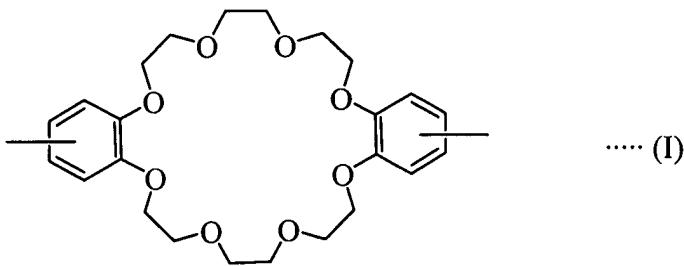
11. (currently amended): ~~A-The~~ crosslinked body according to claim 10, wherein the polymer is a polyurethane.

12. (currently amended): ~~A-The~~ crosslinked body according to claim 11, wherein the polyurethane is formed by mechanical bonding with a biscrown ether.

13. (original): A method of producing a crosslinked body, which comprises crosslinking a polymer having a plurality of large cyclic structures and a bifunctional ammonium salt having a disulfide bond in the presence of thiols through mechanical bonding with a rotaxane structure.

14. (currently amended): ~~A-The~~ method according to claim 13, wherein the polymer having a plurality of large cyclic structures is a polycrown ether.

15. (currently amended): ~~A-The~~ method according to claim 14, wherein the polycrown ether has a crown ether unit represented by the following formula (I):



16. (currently amended): ~~A-The~~ method according to claim 15, wherein the polycrown ether has the crown ether unit of the formula (I) and a urethane bond.

17. (currently amended): ~~A-The~~ method according to claim 13, wherein the bifunctional ammonium salt having the disulfide bond is represented by the following formula (II):



(wherein  $R^1$ ,  $R^2$  and  $X^-$  are the same meanings as mentioned above is a bulky group larger than a hole size of the crown ether unit in the polycrown ether,  $R^2$  is a bivalent hydrocarbon residue, which may include a hetero atom, and  $X^-$  is a monovalent anion).

18. (original): A method of producing a crosslinked body, which comprises polymerizing [3]rotaxane consisting of one shaft and two polymerizable rings at portions of the rings.

19. (currently amended): ~~A-The~~ method according to claim 18, wherein a molecule constituting the polymerizable ring is a crown ether.

20. (currently amended): ~~A-The~~ method according to claim 18, wherein ~~the-a~~ molecule constituting the shaft is a bifunctional ammonium salt having two urethane bonds.

21. (currently amended): ~~A-The~~ method according to claim 20, wherein the bifunctional ammonium salt having the two urethane bonds is represented by the following formula (III):



(wherein  $R^1$ ,  $R^3$ ,  $R^4$  and  $X^-$  are the same meanings as mentioned above is a bulky group larger than a hole size of the crown ether unit in the polycrown ether,  $R^3$  and  $R^4$  are independently a bivalent hydrocarbon residue, which may include a hetero atom, and  $X^-$  is a monovalent anion).

22. (original): A method of producing a crosslinked body, which comprises polymerizing a pseudorotaxane formed by inserting a polymerizable chain molecule into each ring of a compound having two large cyclic structures at a portion of the chain molecule.

23. (currently amended): ~~A-The~~ method according to claim 22, wherein the compound having two large cyclic structures is a biscrown ether.

24. (original): A method of producing a crosslinked body, which comprises crosslinking a polymer having a large cyclic structure and a chain molecule corresponding to a shaft under heating.

25. (currently amended): A method of recycling a crosslinked body, which comprises decrosslinking a crosslinked body as claimed in any one of claims ~~4~~ to 12 under heating.

26. (original): A method of recycling a crosslinked body, which comprises decrosslinking a crosslinked body as claimed in claim 6 or 7 in the presence of thiols.

27. (currently amended): ~~A-The~~ method according to claim 26, wherein the thiol is represented by the following formula (IV):



~~(wherein R<sup>1</sup>, R<sup>2</sup> and X<sup>-</sup> are the same meanings as mentioned above is a bulky group larger than a hole size of the crown ether unit in the polycrown ether, R<sup>2</sup> is a bivalent hydrocarbon residue, which may include a hetero atom, and X<sup>-</sup> is a monovalent anion).~~